

CLAIMS

What is claimed is:

1. A refrigerant cycle comprising:

a compressor;

an outdoor heat exchanger;

a main expansion device;

an indoor heat exchanger;

a valve for selectively communicating refrigerant from a refrigerant path into an economizer heat exchanger at a point intermediate of said outdoor heat exchanger and said indoor heat exchanger, with a main flow of refrigerant further passing through said economizer heat exchanger such that an economizer cycle can be provided when said refrigerant cycle is in either said cooling or said heating mode.

2. A refrigerant cycle as set forth in claim 1, wherein said valve is provided for selectively routing refrigerant from either of said outdoor heat exchanger or said indoor heat exchanger serially through said economizer heat exchanger, and then through said main expansion device, with a tap being provided from a line between said second valve and said economizer heat exchanger.

3. A refrigerant cycle as set forth in claim 2, wherein said economizer expansion device and shut-off valve is positioned on said tap, and upstream of said economizer heat exchanger.

4. A refrigerant cycle as set forth in claim 2, wherein a return line returns said tapped refrigerant from said economizer heat exchanger back to said compressor.
5. A refrigerant cycle as set forth in claim 1, wherein said valve is a four-way reversing valve.

6. A refrigerant cycle comprising:

a compressor;

an outdoor heat exchanger;

a main expansion device;

an indoor heat exchanger;

a first valve for selectively providing a refrigerant from said compressor to said outdoor heat exchanger in a cooling mode, or to said indoor heat exchanger in heating mode;

a second valve provided for selectively routing refrigerant from either of said outdoor heat exchanger or said indoor heat exchanger serially through an economizer heat exchanger, and then through said main expansion device, with a tap being provided from a line between said second valve and said economizer heat exchanger;

an economizer expansion device and shut-off valve positioned on said tap, and upstream of said economizer heat exchanger; and

a return line returning said tapped refrigerant from said economizer heat exchanger back to said compressor.

7. A method of operating a refrigerant cycle comprising the steps of:

(1) providing a refrigerant cycle including a compressor, an outdoor heat exchanger, a main expansion device and an indoor heat exchanger, and providing a first four-way valve for separately communicating a refrigerant from said compressor either to said outdoor heat exchanger in cooling mode, or to said indoor heat exchanger in heating mode, and providing a shutoff valve for controlling flow from a tapped portion of said refrigerant through an economizer heat exchanger to provide an economizer cycle;

(2) operating said refrigerant cycle in either said cooling or said heating mode;

(3) providing an economizer function if desired, by allowing flow of said tapped refrigerant through said economizer heat exchanger in both said cooling and heating modes.

8. A method as set forth in claim 6, wherein a second four-way valve is selectively positioned to route a refrigerant from said outdoor heat exchanger serially through said economizer heat exchanger and then through said main expansion device in a cooling mode, and to serially route said refrigerant from said indoor heat exchanger through said economizer heat exchanger and then said main expansion device in a heating mode.